

## Trend Study 8A-5-00

Study site name: Telephone Hollow.

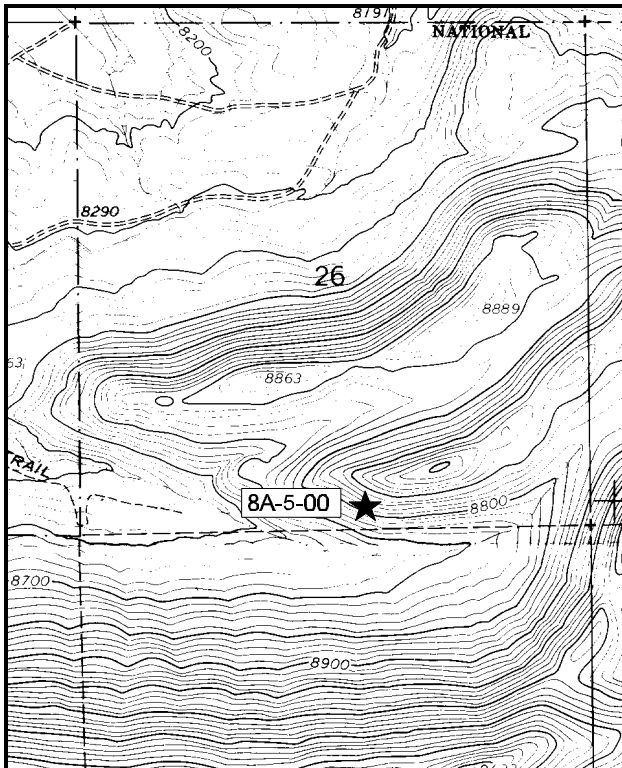
Range type: True Mountain Mahogany.

Compass bearing: frequency baseline 22°M.

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft.), line 4 (71ft).

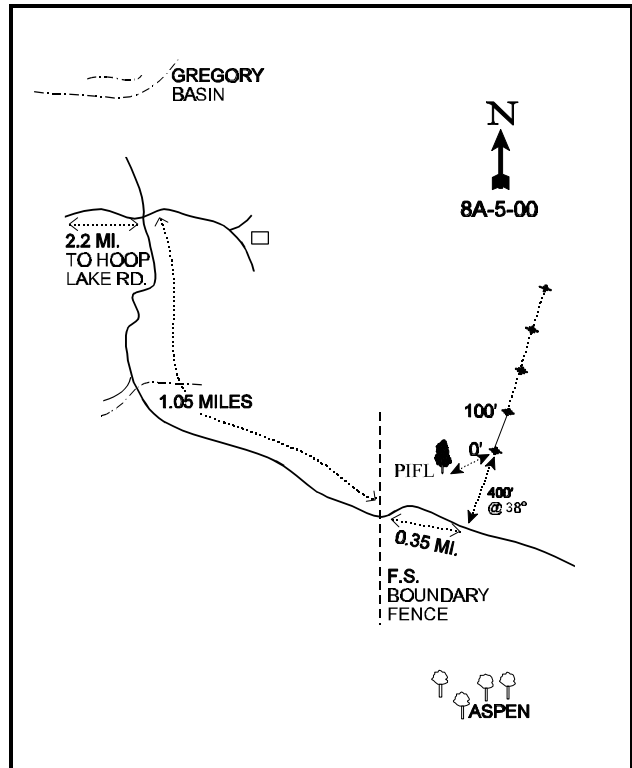
### LOCATION DESCRIPTION

From the Hoop Lake Road along Beaver Creek, proceed east on the road to Gregory Basin. Go 0.6 miles to a gate at a private property line. Continue east 1.7 miles to the 4-way intersection south of Gregory Basin. Turn right and go 0.2 miles to a creek. Cross the creek and drive 0.85 miles to a gate at the FS boundary. Go through the gate and continue for 0.35 miles. Stop across from a lone *Pinus flexilis* on the bottom of the south facing slope. The 0-foot stake is approximately 100 feet to the east of the lone *Pinus flexilis*. There is a red browse tag, #7148, attached to the green fencepost marking the 0-foot end of the frequency baseline.



Map Name: Hoop Lake

Township 3N, Range 16E, Section 26



Diagrammatic Sketch

UTM 4534297 N, 576175 E

## DISCUSSION

### Trend Study No. 8A-5

The Telephone Hollow study is located on the northeast side of Widdop Mountain, on land administered by the Forest Service. Access is through state and privately owned land. The study is located on the south-facing hillside with a slope of approximately 38% to 40% and an elevation of 8,750 feet. At this elevation, the valley is generally covered by snow through the winter and much of the spring. On the hillside above the seeded hollow, the south slope is dominated by true mountain mahogany. These south slopes are important to wintering elk and are also commonly used by moose and to a lesser extent deer. Cover is provided by conifer on the north-facing slopes. Cattle graze the area early in the season, mostly in the seeded hollow at the base of the slope. Pellet group data from 2000 estimate 31 elk days use/acre and 16 moose days use/acre (77 edu/ha and 40 mdu/ha). A small number of deer and cattle also use the site (3 ddu/acre and 2 cdu/acre respectively).

Soil on the Telephone Hollow site is similar to the other trend studies on Widdop Mountain. It is moderately deep but very rocky on the surface and throughout the profile. The surface horizon is loose, while the layer six inches below the surface is compacted with more rock and gravel. The soil has a loam texture with a slightly alkaline pH (7.4). Parent material is a conglomerate rock formation composed of both limestone and sandstone cobble. Phosphorus and potassium are both limited at just 2.8 ppm and 35.2 ppm respectively. Levels less than 10 ppm for phosphorus and 70 ppm for potassium can limit normal plant growth and development. There is a high erosion potential due to the slope. There is evidence of down slope soil movement in the form of pedestaling and terracing. However, protective ground cover is abundant and well dispersed, keeping soil movement to a minimum.

The key browse species is the abundant and vigorous true mountain mahogany. It provided 94% of the browse cover in 1995 and 75% in 2000. In 1988, population density was estimated at 7,266 plants/acre, 55% being young plants. Mature plants numbered 3,133 plants/acre. During the 1995 reading, the population was estimated at 6,200 plants/acre with mature plants numbering 4,360 plants/acre. Density of young plants declined from 4,000 plants/acre in 1988 to 1,800 plants/acre in 1995. Forty-five percent of the mahogany was heavily hedged in 1988. By 1995, only 22% displayed heavy use. Although heavily hedged, the plants appeared quite vigorous. Leader growth was good at 4 to 8 inches in 1995. Vigor was reduced on 42% of the mature mahogany due mostly to insect damage from caterpillars. Population density remained fairly stable in 2000 at 6,720 plants/acre. Heavy use increased to 63% of the plants sampled, but vigor remains normal on most plants with percent decadence low at 4%. Due to the dry conditions of 2000, annual leader growth was low averaging only 2.5 inches. As a result, average height/crown measurements declined. Heavy use estimates may also be overestimated since poor leader growth makes these shrubs appear to be more heavily utilized.

The less preferred browse include moderately low numbers of serviceberry and black sagebrush. In 1995, 42% of the black sagebrush displayed heavy use. By far the most numerous shrub is broom snakeweed which had an estimated density of 16,932 plants/acre in 1988. This short lived shrub declined by 89% in 1995 due in part to prolonged drought conditions.

The herbaceous understory on Telephone hollow is not as diverse or abundant as it is on the other mahogany sites in the unit. Common species include: bluebunch wheatgrass, a dry land sedge, and Indian ricegrass. Forbs are moderately diverse but none are very abundant. The most common forbs are low growing species such as cryptantha, low penstemon and hood's phlox.

### 1995 TREND ASSESSMENT

Ground cover characteristics are similar to those of 1988 with the exception of a slight increase in bare ground

(5% to 7%). Unlike some other sites, litter cover did not decline a great deal. Erosion potential on this site is high, but due to the well dispersed litter and herbaceous vegetation cover, it is not a serious problem. The only soil movement consists of the inevitable, gradual, down slope soil movement with the associated steep slope. Future increases in bare ground should be watched closely. Trend for soil is considered stable at this time. Trend for the dominant browse species, true mountain mahogany, is stable. There has been a slight population decline, with the number of mature plants increasing. Percent decadency decreased, with the proportion of plants displaying heavy use has also declining. Some of this decline can be attributed to the much larger sample size and better sampling design giving a much better estimate of the browse population. The proportion of seedlings and young have declined, yet they are still more than adequate to maintain this moderately long-lived population of true mountain mahogany. Trend for herbaceous understory is slightly up. Sum of nested frequency for grasses increased slightly with nested frequency for bluebunch and Carex both increasing. Forb nested frequency also increased.

#### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly up (4)

#### 2000 TREND ASSESSMENT

Trend for soil is down slightly. Percent bare ground increased more than three-fold from 7% to 23% and sum of nested frequency of perennial grasses declined slightly since 1995. Trend for the key browse, mountain mahogany, is stable. Use is heavier but vigor is good and percent decadence is low at only 4%. Recruitment from young plants is excellent at 29%. Some of the heavy use may be due to the poor annual leader growth in 2000 (averaged only 2.5 inches) which gives the shrubs a more clubbed growth form. Trend for the herbaceous understory is slightly down. Sum of nested frequency of perennial grasses declined slightly while frequency of perennial forbs remained stable. Frequency of Carex and Indian ricegrass declined significantly, while bluebunch wheatgrass remained stable.

#### TREND ASSESSMENT

soil - down slightly due to drought (2)

browse - stable (3)

herbaceous understory - down slightly (2)

HERBACEOUS TRENDS --  
Herd unit 08A, Study no: 5

| Type                        | Species                      | Nested Frequency  |                  |                  | Quadrat Frequency |     |     | Average Cover % |       |
|-----------------------------|------------------------------|-------------------|------------------|------------------|-------------------|-----|-----|-----------------|-------|
|                             |                              | '88               | '95              | '00              | '88               | '95 | '00 | '95             | '00   |
| G                           | Agropyron dasystachyum       | -                 | 4                | 3                | -                 | 2   | 2   | .15             | .01   |
| G                           | Agropyron spicatum           | 200               | 215              | 229              | 82                | 85  | 88  | 4.35            | 7.43  |
| G                           | Carex spp.                   | <sub>ab</sub> 121 | <sub>b</sub> 162 | <sub>a</sub> 127 | 54                | 69  | 54  | 2.70            | 3.10  |
| G                           | Koeleria cristata            | <sub>a</sub> -    | <sub>b</sub> 6   | <sub>b</sub> 8   | -                 | 3   | 3   | .06             | .18   |
| G                           | Leucopoa kingii              | -                 | -                | 2                | -                 | -   | 1   | -               | .03   |
| G                           | Oryzopsis hymenoides         | <sub>b</sub> 78   | <sub>ab</sub> 67 | <sub>a</sub> 43  | 36                | 31  | 23  | 1.71            | 1.43  |
| G                           | Stipa comata                 | 44                | 10               | 1                | 20                | 4   | 1   | .04             | .00   |
| Total for Annual Grasses    |                              | 0                 | 0                | 0                | 0                 | 0   | 0   | 0               | 0     |
| Total for Perennial Grasses |                              | 443               | 464              | 413              | 192               | 194 | 172 | 9.03            | 12.19 |
| Total for Grasses           |                              | 443               | 464              | 413              | 192               | 194 | 172 | 9.03            | 12.19 |
| F                           | Antennaria rosea             | -                 | -                | 3                | -                 | -   | 1   | -               | .03   |
| F                           | Arabis spp.                  | -                 | 2                | -                | -                 | 2   | -   | .01             | -     |
| F                           | Astragalus spp.              | <sub>a</sub> -    | <sub>b</sub> 56  | <sub>a</sub> 2   | -                 | 20  | 2   | 1.50            | .18   |
| F                           | Chenopodium leptophyllum (a) | -                 | <sub>b</sub> 26  | <sub>a</sub> -   | -                 | 10  | -   | .05             | -     |
| F                           | Cirsium spp.                 | 21                | 23               | 26               | 10                | 13  | 13  | .39             | .46   |
| F                           | Comandra pallida             | <sub>a</sub> 2    | <sub>ab</sub> 15 | <sub>b</sub> 24  | 2                 | 7   | 10  | .06             | .54   |
| F                           | Cryptantha spp.              | 79                | 91               | 97               | 40                | 39  | 44  | .79             | .91   |
| F                           | Erigeron eatonii             | <sub>a</sub> -    | <sub>a</sub> -   | <sub>b</sub> 10  | -                 | -   | 4   | -               | .02   |
| F                           | Erigeron spp.                | -                 | -                | 2                | -                 | -   | 1   | -               | .00   |
| F                           | Heterotheca villosa          | -                 | -                | 2                | -                 | -   | 1   | -               | .03   |
| F                           | Hymenoxys acaulis            | <sub>a</sub> 3    | <sub>b</sub> 13  | <sub>a</sub> 3   | 1                 | 7   | 1   | .03             | .01   |
| F                           | Lesquerella alpina           | <sub>a</sub> 13   | <sub>b</sub> 50  | <sub>b</sub> 48  | 6                 | 22  | 30  | .13             | .44   |
| F                           | Lithospermum incisum         | 19                | 12               | 14               | 9                 | 8   | 7   | .11             | .16   |
| F                           | Linum lewisii                | <sub>a</sub> -    | <sub>b</sub> 10  | <sub>b</sub> 17  | -                 | 4   | 7   | .02             | .20   |
| F                           | Machaeranthera grindelioides | 34                | 46               | 24               | 20                | 21  | 12  | .26             | .34   |
| F                           | Oenothera spp.               | -                 | -                | 1                | -                 | -   | 1   | -               | .00   |
| F                           | Penstemon humilis            | 63                | 91               | 73               | 32                | 45  | 35  | .74             | .69   |
| F                           | Phlox hoodii                 | 61                | 47               | 68               | 28                | 21  | 29  | .50             | 1.53  |
| F                           | Townsendia incana            | <sub>b</sub> 7    | <sub>a</sub> -   | <sub>b</sub> 4   | 4                 | -   | 3   | -               | .09   |
| F                           | Trifolium dasyphyllum        | <sub>b</sub> 5    | <sub>a</sub> -   | <sub>b</sub> 53  | 3                 | -   | 18  | -               | 1.61  |
| F                           | Zigadenus elegans            | <sub>a</sub> -    | <sub>b</sub> 13  | <sub>a</sub> -   | -                 | 7   | -   | .03             | .00   |
| Total for Annual Forbs      |                              | 0                 | 26               | 0                | 0                 | 10  | 0   | 0.05            | 0     |
| Total for Perennial Forbs   |                              | 307               | 469              | 471              | 155               | 216 | 219 | 4.61            | 7.29  |
| Total for Forbs             |                              | 307               | 495              | 471              | 155               | 226 | 219 | 4.66            | 7.29  |

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 08A, Study no: 5

| Type             | Species                                 | Strip Frequency |     | Average Cover % |       |
|------------------|---|-----------------|-----|-----------------|-------|
|                  |   | '95             | '00 | '95             | '00   |
| B                | Amelanchier alnifolia                   | 5               | 9   | -               | 1.08  |
| B                | Artemisia frigida                       | 18              | 22  | .22             | .40   |
| B                | Artemisia nova                          | 12              | 14  | .05             | 1.08  |
| B                | Cercocarpus montanus                    | 97              | 96  | 19.10           | 17.37 |
| B                | Chrysothamnus viscidiflorus lanceolatus | 1               | 1   | -               | -     |
| B                | Eriogonum microthecum                   | 8               | 12  | .36             | .27   |
| B                | Gutierrezia sarothrae                   | 40              | 82  | .54             | 2.98  |
| B                | Pinus flexilis                          | 0               | 2   | -               | -     |
| B                | Tetradymia canescens                    | 8               | 7   | .03             | .06   |
| Total for Browse |   | 189             | 245 | 20.31           | 23.27 |

BASIC COVER --

Herd unit 08A, Study no: 5

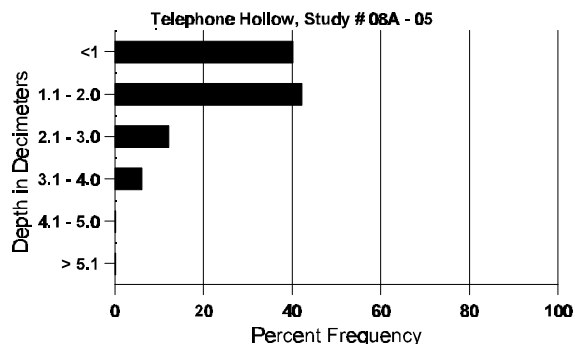
| Cover Type  | Nested Frequency |     | Average Cover % |       |       |
|-------------|------------------|-----|-----------------|-------|-------|
|             | '95              | '00 | '88             | '95   | '00   |
| Vegetation  | 332              | 342 | 9.25            | 32.12 | 42.25 |
| Rock        | 308              | 259 | 8.00            | 16.22 | 12.11 |
| Pavement    | 336              | 327 | 45.50           | 21.33 | 25.05 |
| Litter      | 374              | 347 | 32.25           | 30.12 | 29.00 |
| Cryptogams  | 8                | -   | 0               | .12   | 0     |
| Bare Ground | 261              | 299 | 5.00            | 7.17  | 23.39 |

SOIL ANALYSIS DATA --

Herd Unit 8A, Study # 5, Study Name: Telephone Hollow

| Effective rooting depth (inches) | Temp °F (depth) | pH  | %sand | %silt | %clay | %OM | PPM P | PPM K | dS/m |
|----------------------------------|-----------------|-----|-------|-------|-------|-----|-------|-------|------|
| 14.91                            | 56.8 (16.30)    | 7.4 | 49.4  | 33.0  | 17.6  | 4.1 | 2.8   | 35.2  | 0.6  |

## Stoniness Index



### PELLET GROUP FREQUENCY --

Herd unit 08A, Study no: 5

| Type   | Quadrat Frequency |     | Pellet Transect        |                        |
|--------|-------------------|-----|------------------------|------------------------|
|        |                   |     | Pellet Groups per Acre | Days Use per Acre (ha) |
|        | '95               | '00 | 00                     | 00                     |
| Moose  | 6                 | 9   | 287                    | 16 (39)                |
| Elk    | 15                | 12  | 400                    | 31(76)                 |
| Deer   | 4                 | -   | 44                     | 3 (8)                  |
| Cattle | -                 | -   | 17                     | 2 (4)                  |

### BROWSE CHARACTERISTICS --

Herd unit 08A, Study no: 5

| A<br>G<br>R<br>E                               | Y  | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches) |   | Total |  |  |
|--|----|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|---------------------|---|-------|--|--|
|  |    | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    | Ht. Cr.             |   |       |  |  |
|  |    | Amelanchier alnifolia      |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                     |   |       |  |  |
| Y  | 88 | -                          | 1 | - | -                | - | - | 1                 | - | - | 2              | -   | -   | -    | 133                |                     | 2 |       |  |  |
|  | 95 | -                          | - | - | 2                | - | - | -                 | - | - | 2              | -   | -   | -    | 40                 |                     | 2 |       |  |  |
|  | 00 | -                          | - | - | -                | 1 | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                     | 1 |       |  |  |
| M  | 88 | -                          | 1 | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 66                 | 20 39               | 1 |       |  |  |
|  | 95 | -                          | 2 | - | 1                | 2 | - | -                 | - | - | 4              | 1   | -   | -    | 100                | 20 31               | 5 |       |  |  |
|  | 00 | -                          | 6 | 2 | -                | - | 1 | -                 | - | - | 9              | -   | -   | -    | 180                | 17 25               | 9 |       |  |  |
| % Plants Showing                               |    | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                     |   |       |  |  |
|  |    | '88                        |   |   | 67%              |   |   | 00%               |   |   | 00%            |     |     | -30% |                    |                     |   |       |  |  |
|  |    | '95                        |   |   | 57%              |   |   | 00%               |   |   | 00%            |     |     | +30% |                    |                     |   |       |  |  |
|  |    | '00                        |   |   | 70%              |   |   | 30%               |   |   | 00%            |     |     |      |                    |                     |   |       |  |  |
| Total Plants/Acre (excluding Dead & Seedlings) |    |                            |   |   |                  |   |   |                   |   |   |                | '88 | 199 | Dec: | -                  |                     |   |       |  |  |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '95 | 140 |      | -                  |                     |   |       |  |  |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '00 | 200 |      | -                  |                     |   |       |  |  |

| A<br>Y<br>G<br>R<br>E                          | Form Class (No. of Plants) | Vigor Class         |   |    |                  |   |   |                   |   |   | Plants<br>Per Acre | Average<br>(inches) |     | Total |     |   |     |     |
|--|----------------------------|---------------------|---|----|------------------|---|---|-------------------|---|---|--------------------|---------------------|-----|-------|-----|---|-----|-----|
|  |                            | 1                   | 2 | 3  | 4                | 5 | 6 | 7                 | 8 | 9 |                    | 1                   | 2   |       | 3   | 4 | Ht. | Cr. |
| Artemisia frigida                              |                            |                     |   |    |                  |   |   |                   |   |   |                    |                     |     |       |     |   |     |     |
| S  | 88                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 95                         | 3                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 60  |   | 3   |     |
|  | 00                         | 4                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 80  |   | 4   |     |
| Y  | 88                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 95                         | 1                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 20  |   | 1   |     |
|  | 00                         | 5                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 100 |   | 5   |     |
| M  | 88                         | 6                   | - | -  | -                | - | - | -                 | - | - | 6                  | -                   | -   | -     | 400 | 4 | 4   | 6   |
|  | 95                         | 16                  | - | -  | 8                | - | - | -                 | - | - | 24                 | -                   | -   | -     | 480 | 4 | 7   | 24  |
|  | 00                         | 26                  | - | -  | 3                | - | - | 1                 | - | - | 30                 | -                   | -   | -     | 600 | 3 | 6   | 30  |
| % Plants Showing                               |                            | <u>Moderate Use</u> |   |    | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u>     |                     |     |       |     |   |     |     |
| '88  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   | +20%               |                     |     |       |     |   |     |     |
| '95  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   | +29%               |                     |     |       |     |   |     |     |
| '00  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   |                    |                     |     |       |     |   |     |     |
| Total Plants/Acre (excluding Dead & Seedlings) |                            |                     |   |    |                  |   |   |                   |   |   |                    | '88                 | 400 | Dec:  | -   |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '95                 | 500 |       | -   |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '00                 | 700 |       | -   |   |     |     |
| Artemisia nova                                 |                            |                     |   |    |                  |   |   |                   |   |   |                    |                     |     |       |     |   |     |     |
| Y  | 88                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 95                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 00                         | 1                   | - | -  | -                | - | - | -                 | - | - | 1                  | -                   | -   | -     | 20  |   | 1   |     |
| M  | 88                         | 1                   | - | -  | -                | - | - | -                 | - | - | 1                  | -                   | -   | -     | 66  | 7 | 8   | 1   |
|  | 95                         | -                   | - | 11 | 15               | - | - | -                 | - | - | 26                 | -                   | -   | -     | 520 | 6 | 15  | 26  |
|  | 00                         | 13                  | 2 | -  | 2                | - | - | -                 | - | - | 17                 | -                   | -   | -     | 340 | 5 | 13  | 17  |
| D  | 88                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 95                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 00                         | 4                   | 1 | -  | -                | - | - | -                 | - | - | 4                  | -                   | -   | 1     | 100 |   | 5   |     |
| % Plants Showing                               |                            | <u>Moderate Use</u> |   |    | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u>     |                     |     |       |     |   |     |     |
| '88  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   | +87%               |                     |     |       |     |   |     |     |
| '95  |                            | 00%                 |   |    | 42%              |   |   | 00%               |   |   | -12%               |                     |     |       |     |   |     |     |
| '00  |                            | 13%                 |   |    | 00%              |   |   | 04%               |   |   |                    |                     |     |       |     |   |     |     |
| Total Plants/Acre (excluding Dead & Seedlings) |                            |                     |   |    |                  |   |   |                   |   |   |                    | '88                 | 66  | Dec:  | 0%  |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '95                 | 520 |       | 0%  |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '00                 | 460 |       | 22% |   |     |     |
| Ceratoides lanata                              |                            |                     |   |    |                  |   |   |                   |   |   |                    |                     |     |       |     |   |     |     |
| Y  | 88                         | 1                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | 1   | -     | 66  |   | 1   |     |
|  | 95                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
|  | 00                         | -                   | - | -  | -                | - | - | -                 | - | - | -                  | -                   | -   | -     | 0   |   | 0   |     |
| % Plants Showing                               |                            | <u>Moderate Use</u> |   |    | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u>     |                     |     |       |     |   |     |     |
| '88  |                            | 00%                 |   |    | 00%              |   |   | 100%              |   |   |                    |                     |     |       |     |   |     |     |
| '95  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   |                    |                     |     |       |     |   |     |     |
| '00  |                            | 00%                 |   |    | 00%              |   |   | 00%               |   |   |                    |                     |     |       |     |   |     |     |
| Total Plants/Acre (excluding Dead & Seedlings) |                            |                     |   |    |                  |   |   |                   |   |   |                    | '88                 | 66  | Dec:  | -   |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '95                 | 0   |       | -   |   |     |     |
|  |                            |                     |   |    |                  |   |   |                   |   |   |                    | '00                 | 0   |       | -   |   |     |     |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |    |    |                  |     |    |                   |   |   | Vigor Class    |     |      |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |     | Total |
|--|--------|----------------------------|----|----|------------------|-----|----|-------------------|---|---|----------------|-----|------|------|--------------------|--------------------------------|-----|-------|
|  |        | 1                          | 2  | 3  | 4                | 5   | 6  | 7                 | 8 | 9 | 1              | 2   | 3    | 4    |                    |                                |     |       |
| Cercocarpus montanus                           |        |                            |    |    |                  |     |    |                   |   |   |                |     |      |      |                    |                                |     |       |
| S  | 88     | -                          | 1  | -  | -                | -   | -  | -                 | - | - | 1              | -   | -    | -    | 66                 |                                | 1   |       |
|  | 95     | 10                         | -  | -  | 2                | -   | -  | -                 | - | - | 12             | -   | -    | -    | 240                |                                | 12  |       |
|  | 00     | 4                          | -  | -  | -                | -   | -  | -                 | - | - | 4              | -   | -    | -    | 80                 |                                | 4   |       |
| Y  | 88     | 34                         | 17 | 8  | -                | -   | -  | 1                 | - | - | 60             | -   | -    | -    | 4000               |                                | 60  |       |
|  | 95     | 17                         | 51 | 14 | 5                | 3   | -  | -                 | - | - | 90             | -   | -    | -    | 1800               |                                | 90  |       |
|  | 00     | 57                         | 26 | 3  | -                | -   | 8  | 2                 | - | - | 94             | -   | 2    | -    | 1920               |                                | 96  |       |
| M  | 88     | 1                          | 6  | 40 | -                | -   | -  | -                 | - | - | 47             | -   | -    | -    | 3133               | 25 23                          | 47  |       |
|  | 95     | 2                          | 14 | 17 | 7                | 142 | 36 | -                 | - | - | 126            | 66  | 26   | -    | 4360               | 21 36                          | 218 |       |
|  | 00     | 7                          | 16 | 97 | -                | 13  | 93 | -                 | - | - | 226            | -   | -    | -    | 4520               | 18 28                          | 226 |       |
| D  | 88     | -                          | 1  | 1  | -                | -   | -  | -                 | - | - | 1              | -   | 1    | -    | 133                |                                | 2   |       |
|  | 95     | -                          | -  | 1  | -                | 1   | -  | -                 | - | - | 1              | -   | 1    | -    | 40                 |                                | 2   |       |
|  | 00     | -                          | -  | 2  | 1                | 1   | 9  | 1                 | - | - | 9              | -   | -    | 5    | 280                |                                | 14  |       |
| X  | 88     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  |                                | 0   |       |
|  | 95     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 60                 |                                | 3   |       |
|  | 00     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  |                                | 0   |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |    |    | <u>Heavy Use</u> |     |    | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |      |                    |                                |     |       |
| '88  |        | 22%                        |    |    | 45%              |     |    | .91%              |   |   | -15%           |     |      |      |                    |                                |     |       |
| '95  |        | 68%                        |    |    | 22%              |     |    | 09%               |   |   | + 8%           |     |      |      |                    |                                |     |       |
| '00  |        | 17%                        |    |    | 63%              |     |    | 02%               |   |   |                |     |      |      |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |    |    |                  |     |    |                   |   |   |                | '88 | 7266 | Dec: | 2%                 |                                |     |       |
|  |        |                            |    |    |                  |     |    |                   |   |   |                | '95 | 6200 |      | 1%                 |                                |     |       |
|  |        |                            |    |    |                  |     |    |                   |   |   |                | '00 | 6720 |      | 4%                 |                                |     |       |
| Chrysothamnus viscidiflorus lanceolatus        |        |                            |    |    |                  |     |    |                   |   |   |                |     |      |      |                    |                                |     |       |
| M  | 88     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  | -                              | 0   |       |
|  | 95     | 1                          | -  | -  | -                | -   | -  | -                 | - | - | 1              | -   | -    | -    | 20                 | 5 8                            | 1   |       |
|  | 00     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  | 9 13                           | 0   |       |
| D  | 88     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  |                                | 0   |       |
|  | 95     | -                          | -  | -  | -                | -   | -  | -                 | - | - | -              | -   | -    | -    | 0                  |                                | 0   |       |
|  | 00     | -                          | -  | -  | 1                | -   | -  | -                 | - | - | 1              | -   | -    | -    | 20                 |                                | 1   |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |    |    | <u>Heavy Use</u> |     |    | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |      |      |                    |                                |     |       |
| '88  |        | 00%                        |    |    | 00%              |     |    | 00%               |   |   |                |     |      |      |                    |                                |     |       |
| '95  |        | 00%                        |    |    | 00%              |     |    | 00%               |   |   | + 0%           |     |      |      |                    |                                |     |       |
| '00  |        | 00%                        |    |    | 00%              |     |    | 00%               |   |   |                |     |      |      |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |    |    |                  |     |    |                   |   |   |                | '88 | 0    | Dec: | 0%                 |                                |     |       |
|  |        |                            |    |    |                  |     |    |                   |   |   |                | '95 | 20   |      | 0%                 |                                |     |       |
|  |        |                            |    |    |                  |     |    |                   |   |   |                | '00 | 20   |      | 100%               |                                |     |       |



| A<br>Y<br>G<br>R<br>E                          | Y  | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |       |       | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |     | Total |
|--|----|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-------|-------|--------------------|--------------------------------|-----|-------|
|  |    | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3     | 4     |                    |                                |     |       |
| Eriogonum microthecum                          |    |                            |   |   |                  |   |   |                   |   |   |                |     |       |       |                    |                                |     |       |
| Y  | 88 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 95 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 00 | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -     | -     | 20                 |                                | 1   |       |
| M  | 88 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     | -                  | -                              | 0   |       |
|  | 95 | 15                         | - | - | -                | - | - | -                 | - | - | 15             | -   | -     | 300   | 5                  | 11                             | 15  |       |
|  | 00 | 20                         | - | - | -                | - | - | -                 | - | - | 20             | -   | -     | 400   | 5                  | 7                              | 20  |       |
| D  | 88 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 95 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 00 | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -     | 20    |                    |                                | 1   |       |
| % Plants Showing                               |    | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |       |       |                    |                                |     |       |
| '88  |    | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |       |       |                    |                                |     |       |
| '95  |    | 00%                        |   |   | 00%              |   |   | 00%               |   |   | +32%           |     |       |       |                    |                                |     |       |
| '00  |    | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |       |       |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |    |                            |   |   |                  |   |   |                   |   |   |                | '88 | 0     | Dec:  | 0%                 |                                |     |       |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '95 | 300   |       | 0%                 |                                |     |       |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '00 | 440   |       | 5%                 |                                |     |       |
| Gutierrezia sarothrae                          |    |                            |   |   |                  |   |   |                   |   |   |                |     |       |       |                    |                                |     |       |
| S  | 88 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 95 | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -     | 20    |                    |                                | 1   |       |
|  | 00 | 4                          | - | - | -                | - | - | -                 | - | - | 4              | -   | -     | 80    |                    |                                | 4   |       |
| Y  | 88 | 19                         | - | - | -                | - | - | -                 | - | - | 19             | -   | -     | 1266  |                    |                                | 19  |       |
|  | 95 | 9                          | - | - | -                | - | - | -                 | - | - | 9              | -   | -     | 180   |                    |                                | 9   |       |
|  | 00 | 7                          | - | - | -                | - | - | -                 | - | - | 7              | -   | -     | 140   |                    |                                | 7   |       |
| M  | 88 | 231                        | - | - | -                | - | - | -                 | - | - | 231            | -   | -     | 15400 | 7                  | 5                              | 231 |       |
|  | 95 | 88                         | - | - | -                | - | - | -                 | - | - | 88             | -   | -     | 1760  | 5                  | 6                              | 88  |       |
|  | 00 | 255                        | - | - | 1                | - | 7 | -                 | - | - | 263            | -   | -     | 5260  | 5                  | 9                              | 263 |       |
| D  | 88 | 4                          | - | - | -                | - | - | -                 | - | - | 2              | -   | 1     | 266   |                    |                                | 4   |       |
|  | 95 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 00 | 6                          | - | - | -                | - | - | -                 | - | - | 5              | -   | -     | 120   |                    |                                | 6   |       |
| X  | 88 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 95 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 0     |                    |                                | 0   |       |
|  | 00 | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -     | 20    |                    |                                | 1   |       |
| % Plants Showing                               |    | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |       |       |                    |                                |     |       |
| '88  |    | 00%                        |   |   | 00%              |   |   | .78%              |   |   | -89%           |     |       |       |                    |                                |     |       |
| '95  |    | 00%                        |   |   | 00%              |   |   | 00%               |   |   | +65%           |     |       |       |                    |                                |     |       |
| '00  |    | 00%                        |   |   | 03%              |   |   | .36%              |   |   |                |     |       |       |                    |                                |     |       |
| Total Plants/Acre (excluding Dead & Seedlings) |    |                            |   |   |                  |   |   |                   |   |   |                | '88 | 16932 | Dec:  | 2%                 |                                |     |       |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '95 | 1940  |       | 0%                 |                                |     |       |
|  |    |                            |   |   |                  |   |   |                   |   |   |                | '00 | 5520  |       | 2%                 |                                |     |       |

| A<br>G<br>E                                    | Y<br>R | Form Class (No. of Plants) |   |   |                  |   |   |                   |   |   | Vigor Class    |     |     |      | Plants<br>Per Acre | Average<br>(inches)<br>Ht. Cr. |    | Total |
|--|--------|----------------------------|---|---|------------------|---|---|-------------------|---|---|----------------|-----|-----|------|--------------------|--------------------------------|----|-------|
|  |        | 1                          | 2 | 3 | 4                | 5 | 6 | 7                 | 8 | 9 | 1              | 2   | 3   | 4    |                    |                                |    |       |
| Pinus flexilis                                 |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| Y  | 88     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 66                 |                                | 1  |       |
|  | 95     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
|  | 00     | 2                          | - | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 40                 |                                | 2  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '95  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| '00  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 66  | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 0   |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 40  |      | -                  |                                |    |       |
| Tetradymia canescens                           |        |                            |   |   |                  |   |   |                   |   |   |                |     |     |      |                    |                                |    |       |
| Y  | 88     | 2                          | - | - | -                | - | - | -                 | - | - | 2              | -   | -   | -    | 133                |                                | 2  |       |
|  | 95     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 20                 |                                | 1  |       |
|  | 00     | -                          | - | - | -                | - | - | -                 | - | - | -              | -   | -   | -    | 0                  |                                | 0  |       |
| M  | 88     | 1                          | - | - | -                | - | - | -                 | - | - | 1              | -   | -   | -    | 66                 | 4                              | 7  |       |
|  | 95     | 6                          | 3 | - | -                | - | - | -                 | - | - | 9              | -   | -   | -    | 180                | 6                              | 11 |       |
|  | 00     | 5                          | 2 | 1 | -                | - | - | -                 | - | - | 8              | -   | -   | -    | 160                | 7                              | 9  |       |
| % Plants Showing                               |        | <u>Moderate Use</u>        |   |   | <u>Heavy Use</u> |   |   | <u>Poor Vigor</u> |   |   | <u>%Change</u> |     |     |      |                    |                                |    |       |
| '88  |        | 00%                        |   |   | 00%              |   |   | 00%               |   |   | + 1%           |     |     |      |                    |                                |    |       |
| '95  |        | 30%                        |   |   | 00%              |   |   | 00%               |   |   | -20%           |     |     |      |                    |                                |    |       |
| '00  |        | 25%                        |   |   | 13%              |   |   | 00%               |   |   |                |     |     |      |                    |                                |    |       |
| Total Plants/Acre (excluding Dead & Seedlings) |        |                            |   |   |                  |   |   |                   |   |   |                | '88 | 199 | Dec: | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '95 | 200 |      | -                  |                                |    |       |
|  |        |                            |   |   |                  |   |   |                   |   |   |                | '00 | 160 |      | -                  |                                |    |       |